University of Alberta

Impact of Speech-Language Pathology Students on Patient Care

by

Jennifer J. Hancock

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Science

in

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In memory of my grandfather

Dr. P.D. Hargrave

1909 - 1992

ABSTRACT

The purpose of this investigation was to gain a better understanding of whether speech-language pathology (S-LP) students were an asset or a liability to the institutions they were associated with during their clinical training. The subjects were 11 S-LP supervisors and their 11 student interns. Data related to patient care and non-patient care activities were obtained from Care Units Documentation Forms completed by the subjects. Paired t-tests were used to analyze the effect of student presence on productivity. Results indicated students were an asset in terms of patient care and non-patient care not related to clinical supervision. Significant relationships were found between student experience and productivity. Information gained from this study regarding the impact of S-LP students may be of interest to clinical service facilities and academic training programs in negotiating and planning for clinical education and to professional associations regarding position and policy issues.

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CHAPTER 1

INTRODUCTION

Classroom education, even when combined with an on-site clinic, is unable to provide the breadth and depth of training necessary to create competent new professionals. Therefore, it is essential that clinical facilities provide students with practical experience. Failure to do so may lead to the decline of the profession as universities will be unable to produce graduating therapists with the knowledge and confidence to go directly from the university to the work place. The issue of whether speech-language pathology students are an asset or a liability for the institutions participating in their clinical training is rigorously debated.

Unfortunately, the research necessary to resolve the asset/liability issue has been minimal in all the allied health professions. Studies come primarily from the physical therapy profession interspersed with information from the occupational therapy profession.

Health care cutbacks have created an increased workload for speech-language pathologists (S-LPs) in health care settings. It is increasingly important to provide efficient, high quality patient care. As a result, professionals have growing caseloads and more job responsibilities than ever before. Professionals in public sector health care facilities are re-assessing their commitment to student training. Privatization of health care may further erode the institutions' willingness to accept students. If professionals believe students will decrease their productivity level by draining time and resources, institutions are apt to reduce the number of student placements.

Simultaneously, budget constraints are causing health care institutions to hire support workers (assistants) as opposed to rehabilitation medicine professionals. Assistants are hired with the belief that they enable more service provision at a lower cost (Hagler, et al., 1993; Hagler, Warren & Pain, 1995). It would appear that speech-language pathology (S-LP) students might also increase service provision, especially since they are specifically trained and educated for the S-LP profession. It is noteworthy that S-LP students are not paid and thus, should be more cost effective.

The responsibility lies with researchers to provide health care facilities with information that defines student impact on service provision. Information gained from this study may benefit clinical service facilities by helping administrators better understand the impact of students on time and resources. The findings may also influence academic training programs as departments plan for the clinical training process. Eventually, when all the variables are understood, training programs may be able to match student education to practicum disorder areas and supervisor level, complementing service delivery rather than compromising it. Professional associations may also utilize these findings when developing position and policy guidelines. Rabkin (1986) stated:

> So many decisions begin with the economics of care but have consequences which promise to enmesh teaching and learning, research, the very integrity of medical schools and teaching hospitals, and, of course, patient care. As a society we shall be obliged to scrutinize most dispassionately the outcome of our present-day revolution in medical care delivery and financing. If we revel

in the short-term savings but disregard their full consequences, we do so at the ultimate peril of the health of the nation. (p. 103-104)

CHAPTER 2

LITERATURE REVIEW

A review of previous studies regarding the impact of students (in varying rehabilitation medicine fields) on institutions they were associated with during their clinical training will be discussed in this section. Two areas of research will be reviewed. First, the studies that evaluated the financial costs of students to facilities will be covered. Second, research dealing with institutional productivity during clinical education will be described. In reality, it is difficult to completely separate cost-benefit studies from productivity studies since the institutions' productivity levels ultimately result in dollar valuations.

Cost-Benefit Studies

Many of the related studies have occurred in the United States where the focus has been on cost-benefit analyses, with a particular emphasis on the resulting dollar value for facilities which generate revenue from procedural charges (Chung, Spelbring & Boissoneau, 1980; Gandy & Sanders, 1990; Halonen, Fitzgerald & Simmon, 1976; Hammersberg, 1982; MacKinnon & Page, 1986; Page & MacKinnon, 1987; Pobojewski, 1978; Porter & Kincaid, 1977; Ramsden & Fischir, 1970). In Canada, health care institutions are funded primarily by the individual provinces with complicated pre-service grants, rather than by revenue for services rendered. Therefore, until recently, cost-benefit studies have, been less common among Canadian health care facilities.

Cost-benefit studies have taken many forms. Some have used mathematical models to assess quantitative, financial cost-benefit relationships (Chung et al., 1980; Halonen et al., 1976; Pobojewski, 1978; Porter & Kincaid, 1977). Pobojewski (1978) created a model and tested it to determine the monetary costs (educational, material, overhead) or benefits to the hospital when students were present. An estimated benefit of $46,186 was found for the hospital when ten radiology technology students were present for 12 months. Halonen et al. (1976) also created a mathematical model for measuring costs for a clinical education program. This model was based on cost per student for institutions that charged on a procedure basis. Porter and Kincaid (1977) applied the Halonen et al.(1976) model to retrospective data and found that full-time physical therapy students produced a financial net gain for the facilities involved. Chung et al. (1980) developed another cost-benefit analysis to assess costs and benefits to agencies supplying occupational therapy fieldwork education. Chung et al. (1980) stated that the major advantage of practical experience was the ability to put theory into practice. However, in order to do this successfully, the university must work in cooperation with the supervising institutions. Chung et al.'s (1980) cost-benefit study concluded that clinical agencies should neither expect reimbursement for accepting students nor should universities feel obligated to provide compensation to clinical facilities for taking their students. More research is necessary in the cost-benefit area, both qualitatively and quantitatively, to further understand whether students create more costs than benefits or vice versa.

Ramsden and Fischir (1970) approached the cost-benefit issue by investigating whether teaching hospitals should assess their fee structure differently than strictly patient service hospitals. Results indicated that teaching facilities for physical therapy need to determine fees differently by considering education and research in addition to patient service. They used a cost-analysis of services in a teaching center to restructure a fee schedule that had been developed for a non-teaching, patient-service-oriented clinic. Rather than using mathematical models, Page and MacKinnon (1987) used a questionnaire/interview combination to determine the time commitment by clinical instructors to the clinical education of physical therapy students. The purpose of this study was not to determine whether students were financial burdens. Instead, it created a methodology to estimate clinical instruction time in order to establish funding allocations. Gandy and Sanders (1990) completed a comprehensive review of the direct and indirect costs and benefits of clinical education in terms of the student, the academic institution and the clinical institution. They found staff supervision time and student service provision to be the two important variables to consider.

One study by MacKinnon and Page (1986) dealt with speech-language pathology students and the cost-benefit issue at the University of British Columbia. This study examined the use of staff time within facilities which offered clinical instruction to students in occupational therapy, physical therapy, speech-language pathology and audiology at the University of British Columbia. MacKinnon and Page (1986) concluded the majority of the supervisory institutions' staff time was directed toward teaching students. This finding possibly confirms Gandy and Sanders' (1990)

study which indicated staff supervision time as an important variable to consider for the costs and benefits of clinical education. This study provided no information on the quality of the placements provided. The goal was strictly to establish organizational and monetary policies for program management.

Hammersberg (1982) used survey instruments completed by supervisors and staff members of six allied health programs. The surveys required the subjects to estimate the amount of time given to the education of students, the cost of supplies for the education of students (cost aspect) and the contribution of students to the performance of the daily workload (credit aspect). The survey responses were averaged and results indicated that the costs of having students were greater than the contributions the students provided.

Meyer (1994) used a qualitative approach to identify monetary and non-monetary costs and benefits for clinical education. Meyer used naturalistic inquiry (observation, individual and focus group interviews, documents review) to gather data from three clinical education sites. The subjects included administrators, supervisors, occupational therapy students and patients. The four types of subjects all derived costs and benefits differently. Clinical education was affected when supervisors were not satisfied with the administration and/or other supervisors. The additional responsibility of supervision compounded supervisor dissatisfaction in existing stressful scenarios. Clinical education improved when communication, structure, education and support were present between administrators, supervisors, students and patients.

Summary. After reviewing the literature, no conclusive evidence prevailed to indicate that students were an asset or a liability to institutions during clinical education. One study (Hammersberg, 1982) found that students were a financial liability and contradicted other studies which found that students were a financial benefit (Pobojewski, 1978; Porter & Kincaid, 1977). The cost-benefit studies do not really provide information on how students affect the amount of patient care (productivity). Research on productivity has been conducted and will be discussed in the following section.

Productivity Studies

Studies that reduce cost-benefit to a dollar value do not consider the many positive qualitative effects students offer their training facilities. Students are challenging and stimulating to their supervisors and their departments. They bring youthful ideas and offer unsurpassed recruitment possibilities for the training institutions (Cebulski & Sojkowski, 1988; Halonen et al. 1976; Leiken, 1983).

Perhaps one of the most meaningful indices of student impact on clinical service facilities is the amount of patient/client services. Unfortunately, this measure is not often used. Three studies that managed to combine cost-benefit and productivity variables for clinical education found both financial and productivity benefits for the facilities. Lopopolo's (1984) research indicated that students increased the number of patient visits and created a net financial gain. A second study by Coulson et al. (1991) investigated the productivity of physical therapy private practice clinics. When senior students were present, a net increase of $216.77 per day and an increase of 3.25

patient visits occurred. The third study by Graham, Catlin, Morgan and Martin (1991) found that the student/supervisor team's productivity (mean number of patients, mean revenue per day, mean treatment units per day) was greater than the productivity when therapists were working alone.

Similar studies examined productivity without directly combining the knowledge of net financial gains or losses. Two studies (Leiken, 1983; Leiken, Stern & Baines, 1983) suggested that students were an asset to the amount of patient care provided in one hospital. Physical therapy, occupational therapy and radiology technology students provided an increased number of patient treatments.

The amount of patient/client service in physical therapy was investigated in acute care hospital environments by Bristow and Hagler (1994, in press), Cebulski and Sojkowski (1988), Ladyshewsky (1995) and Ladyshewsky, Bird and Finney (1994). Cebulski and Sojkowski (1988) found that 72% of the Clinical Instructor-Student pairs in the study were more productive than the Clinical Instructors without students. Bristow and Hagler (1994) examined the productivity of physical therapy students during clinical placements and assessed the impact of supervision on professional staff time. Their results indicated that staff members' patient-related service time decreased during periods of supervision but the direct patient care provided by students was greater than the therapists' supervision time. Bristow and Hagler (in press) extended their 1994 study by comparing individual staff time with no student assignments and the same staff combined with their students. This investigation supported their earlier findings by indicating clinical placements had positive effects on service delivery.

Results indicated that the number of patients seen per day significantly increased with students and that the average amount of assessment, treatment and indirect patient services did not change with students present. Ladyshewsky et al. (1994) examined the impact of physical therapy student placements on outpatient service productivity. These researchers concluded that staffing level, length of waiting list per full time equivalent (FTE), caseload mix and meeting time, not student factors, had the greatest influence on outpatient service productivity. In 1995, Ladyshewsky studied productivity using a collaborative clinical education model in an acute inpatient clinical setting. The findings, using the two to one supervisor model (Ladyshewsky, 1993), demonstrated students increased productivity levels. These results were important because they suggested that students were not a liability when using the collaborative model of supervision. Since students were found to be an asset and the hospital was able to provide placements for twice as many students, the 2:1 model becomes an especially effective educational paradigm. The studies by Bristow and Hagler (1994, in press), Ladyshewsky (1995) and Ladyshewsky et al. (1994) were conducted in Canada and used the Physiotherapy Workload Measurement System (PWMS) (Speech/Language Pathology, 1988). This is a statistical database which produces workload indicators for each staff member and student.

Presently, the main concern of productivity research has been to investigate how students affect patient care. However, many of these studies have also considered other variables pertaining to placement, student and/or supervisor. Bristow and Hagler (1994, in press), for example, looked at service areas and how productivity differed

among the different service areas in the hospital when students were present. Findings indicated that productivity continued to increase with students present in all service areas. However, increased amounts of supervision (Bristow & Hagler, 1994) were required for the service areas that required specialized, intensive rehabilitation (e.g. the Spinal Cord Injury Unit). The impact of referral base (hospital residents and/or outpatients) was not considered but was suggested as another placement variable that could possibly affect productivity. Cebulski and Sojkowski (1988) indicated that the length of internship may affect productivity. Productivity was enhanced with placements that were full-time and two weeks or greater in length. Like Cebulski and Sojkowski (1988), Graham et al. (1991) also indicated that longer placements (e.g. 5 weeks) increased productivity and efficiency when compared with shorter placements. Ladyshewsky et al. (1994) discovered that other factors existing in the physical therapy department (waiting list length, caseload mix, meeting time), not the students, were affecting productivity.

Cebulski and Sojkowski (1988) attempted to explain lower productivity levels with certain supervisor-student pairs by relating it to student/supervisor weaknesses. The student/supervisor pairs where the productivity decreased from the supervisor working alone had possible explanations of: (a) the students involved in the pairs were labelled as "problem performers", (b) supervisors were experiencing other problems (health related) during the practicum and (c) one or two week placements. Other studies (Bristow & Hagler, 1994, in press; Ladyshewsky et al. 1994; Ladyshewsky, 1995) have attempted to control the variables of student education level

and practicum experience and match student subjects for equality. Cebulski and Sojkowski (1988) described the supervisor subjects as being chosen with varying job responsibilities or combination of responsibilities (treatment, teaching, research, management) and did not describe the student education level. Research should consider student and supervisor variables. The role of the supervisor is critical. The supervisor is an integral part of the supervisor/student pair. Could productivity be affected as much by supervisor experience level as student experience level and/or could they be interacting with each other to affect the amount of patient care being provided?

The above research has indicated that students are not a liability to productivity. It also indicates that there is a need for further research to discover what qualities or mixes of qualities among internship environments, students, and supervisors are needed to enhance productivity. Type of treatment, referral base, type of facility, length of practicum, student experience, supervisor work experience, supervisor supervision experience and student presence are possible variables that may affect the amount of patient care provided in facilities offering speech-language pathology treatment.

Summary. To date, there has been no published research in speech-language pathology to assess the impact of students on institutions' productivity levels during students' practicum experiences. The general findings of the research from other professions, as discussed above, indicate that facilities benefit from having students in terms of financial gains, increased patient visits, and increased service delivery

(Bristow & Hagler, 1994, in press; Cebulski & Sojkowski, 1988; Coulson et al., 1991; Graham et al., 1991; Ladyshewsky, 1995; Leiken, 1983; Leiken et al., 1983; Lopopolo, 1984).

Purpose

Based on previous findings, it was proposed that S-LP students would increase institutional productivity. The original purpose of this study was to answer two questions related to the amount of patient care delivered when speech-language pathology students were on site during their clinical practicum assignments:

1. Will student presence affect the amount of patient care?
2. Will student presence affect the amount of non-patient care?

Prior to data collection for this study, a retrospective pilot study (Hancock, 1996) was carried out to determine whether S-LP students were an asset or a liability in terms of the amount of patient care provided during their clinical training. Results from Hancock's (1996) pilot study indicated that students maintained the amount of patient care and increased the amount of non-patient care at that particular rehabilitation hospital. To have provided a complete understanding of why a student contributed to increased amounts of non-patient care, Hancock's (1996) study would have required access to hourly data under specific codes of non-patient care. Specifically coded data were not tracked at the cooperating facility. Tracking under more specific headings other than the general code of Non-Patient Care was not mandatory. Originally, the pilot study (Hancock, 1996) set out to analyze how much non-patient care was given to Clinical Instruction/Teaching. The retrospective data

were obtained from the Speech/Language Pathology and Audiology Workload Measurement System (WMS) (1988) computer database. Unfortunately, the WMS limited the data and data codes that were available for analysis. Ultimately, it was impossible to explain how the increased supervisors' non-patient care hours were utilized. The possible explanations were: (a) the increased non-patient care hours were given to the student for clinical education, (b) the supervisor was now able to take part in other job related activities, or (c) there were increased hours available for a combination of clinical teaching and other job activities. Perhaps special projects or research can be done by S-LPs when they have a student, because they have more free time. This might be true when the student is performing direct treatment, and the supervisor is not always having to observe (especially toward the end of an internship). If the non-patient care that did not relate to clinical supervision increased with students present, it would be an indicator that the increased non-patient care was not due to, or at least not completely due to, supervisory responsibilities.

Another important variable that was not considered in Hancock's (1996) pilot study was student experience. Hancock (1996) noted that it would be useful to observe the level of productivity across different levels of student experience. If it could be determined that positive effects of students on patient care are attributable to senior level students and that junior level students decrease productivity, then institutions and universities would need to cooperate in developing supervision models and practicum experiences to accommodate varying levels of student experience.

The retrospective pilot study (Hancock, 1996) indicated that a prospective study would have three advantages. Initially, it would enable the investigator to observe changes in productivity by comparing the results of a new prospective study with the results of previous retrospective productivity studies in S-LP (Hancock, 1996) and in physical therapy (Bristow & Hagler, 1994, in press; Cebulski & Sojkowski, 1988; Ladyshewsky et al. 1994; Ladyshewsky, 1995). Secondly, it would allow the creation of subcodes specifically for students and supervisors that would enable the investigator to discover where non-patient care time was being utilized. Thirdly, it would enable the investigator to consider possible variables of student experience.

Hancock's (1996) pilot study findings of maintained patient care, increased non-patient care and the inability to explain precisely how this non-patient care had increased, led to the creation of two new questions. A fourth question was developed to shed light on the variable of student experience. The following research questions were addressed in this study:

1. Will student presence affect the amount of patient care?
2. Will student presence increase the amount of non-patient care not related to clinical supervision?
3. Will student presence increase the amount of clinical supervision?
4. Are there relationships between indices of student experience and measures of productivity?

CHAPTER 3

METHODOLOGY

Subjects

Subjects for this study were 11 pairs of speech-language pathology clinical educators and their students. Students were enrolled in their last clinical placement in health care institutions across Canada and the United States between the period of May to August 1996 as part of the full-time practicum requirement for the University of Alberta's MSLP program and McGill University's M.Sc. (Applied) program in speech-language pathology. Practicum lengths ranged from 8 to 21 weeks (M = 12) in length.

Supervisors. Supervisor subjects were qualified speech-language pathologists who had worked for at least one year prior to supervising graduate students in full-time practicum assignments. The supervisors' clinical experience ranged from 1 to 11 years (M = 5.8) and they had supervised between 0 and 45 students (M = 6.6) prior to this study. Four supervisors had received no previous training in the area of supervision. Two supervisors had one inservice training session on supervision and one supervisor had two inservice training sessions. Two supervisors had one inservice training session and one conference on supervision. One supervisor had one conference on supervision. One supervisor had one inservice training session and one university credit course in supervision.

Students. Ten of the student subjects were in the second year of the University of Alberta MSLP graduate program and one student subject was in the second year of

the McGill University M.Sc. (applied) program. Student clinicians ranged in age from 25 to 33 years (M = 27.6). All students had completed their master's level coursework requirements. Students had between six and eight years (M = 6.7) full-time university training. Students had between zero and 26 months (M = 7.0) of full-time equivalent (FTE) related clinical or teaching experience (not including the practical experience acquired while participating in this study). Student subjects' practicum hours prior to this placement ranged from 200 to 596 hours (M = 374.0).

Equipment and Materials

For all practical purposes, only one data collection tool was used in this study. However, there were five versions of this one document. The students' and supervisors' Patient Care Units and Non-Patient Care Units, defined in Appendix A, were recorded on the Care Units Documentation Forms (Appendices B, C, D, E & F). When students were present, supervisors and students had to complete separate working copies (rough copies), confer with each other and complete the formal copy (sent back to researcher). Supervisors had to complete a working copy (rough copy) and a formal copy (sent back to the researcher) when students were not present.

Procedures

Data Collection. Thirty-five possible participants were obtained through the University of Alberta Academic Coordinator of Clinical Education. The coordinator provided the names and locations of 35 MSLP student/supervisor pairs meeting the subject requirements and who might agree to participate in the study. One second year M.Sc. (applied) McGill University S-LP student and practicum supervisor were

suggested as a possible subject pair by another participating supervisor. A total of 36 student/supervisor pairs were asked to participate in this study. The students and supervisors were invited to participate with Letters of Invitation (Appendices G & H). The Letters of Invitation were mailed to all eligible subjects along with a Participation Guide (Appendix I), Information Sheet for Participants (Appendix J), Informed Consent Documents (Appendices K & L), the Classification Handout of Patient Care and Non-Patient Care Activities (Appendix M), and Care Units Documentation Forms. The documents were mailed to the student of the student/supervisor pair. The student was responsible for handing the supervisor the package marked Supervisor containing the above documents. All instructions to the subjects were provided in written form. The Letter of Invitation specified that the consent documents were to be mailed back within five days of receiving the document. The letter specified that the subjects each had a second envelope marked Care Unit Documentation Forms containing the Care Units Documentation Forms and Classification of Patient Care and Non-Patient Care Form. If the subjects did not consent or did not wish to participate in the study they were advised to disregard the second envelope.

The mail-out was received by the subjects in May or June 1996, depending on their own practicum start dates. Data collection for students and supervisors occurred any time during the placement but only after both members of the student/supervisor pair had agreed to participate by signing and mailing back the Informed Consent Documents in the pre-addressed and stamped envelope. Eleven of the 36 possible student/supervisor pairs consented to participate in this study. Each student/supervisor

pair chose a typical treatment week (excluding the first or last week of the placement) during which they would record data on the appropriate "Working Copy" of the Care Units Documentation Form. Both the students and supervisors filled out their own "Working Copy" of the Care Units Documentation Form for a five day period (or equivalent) during which a student was present. Once the week was completed, the supervisor and the student conferred with each other regarding how time was spent. The supervisor and student consolidated their two "Working Copies" onto one "Formal Copy" of the Care Units Documentation Form, completing both side one and side two of the "Formal Copy". Side two of the "Formal Copy" (Appendix D) recorded demographic information. The number of practicum hours prior to the placement, week of practicum, and months of prior full-time equivalent (FTE) related clinical or teaching experience were considered possible variables of student experience. Refer to Appendix A for complete definitions of the variables. The "Formal Copy" was mailed to the researcher in the envelope provided.

After the students left the practicum site, the supervisors were again responsible for filling out the same Care Units Documentation Form for a week that was comparable to the week when data were taken with a student present. The investigator instructed the subjects to avoid recording information during atypical treatment weeks. Supervisors received a pre-addressed stamped envelope in which to mail the second set of data. Data were to be recorded after the students had left the practicum sight ("Without Student").

The sampling period varied depending on the student and supervisor involved. Data were obtained for a week consisting of five full days or the equivalent (preferably consecutive), as long as that "week" met the "With a Student" criteria described under Student Presence in Appendix A. The data collection week was not to be the first or the last week of the student placement. The same guidelines for collecting data pertaining to a supervisor "Without a Student" (Appendix A) were followed.

The Care Units Documentation Form was designed to track Units of Patient Care Activities and Units of Non-Patient Care Activities. Non-Patient Care Units were further delineated into Clinical Supervision, Support Services, Service to Hospital and Community, Research, Other Clinical Teaching and Other (Appendix M). This breakdown further classified a therapist's Clinical Supervision by requiring the subjects to record time under the headings of Orientation and Explanation of Procedures and Equipment, Student-Supervisor Conference, W-PACC Orientation, Student Monitoring and Other (Practicum Student Related) (Appendix M). If data analysis revealed that Non-Patient Care Units increased while the professional supervised a student, the researcher would be able to explain in more detail how the change was related to the student's presence. If the units were categorized under Clinical Supervision, the researcher would be able to ascertain not only how much supervisory time was required for the S-LP student, but also what forms that supervisory time commitment took.

Design. This study used a repeated measures, causal-comparative design for questions one, two and three and a correlational design for question four.

Variables. Questions one, two and three had one independent variable, Student Presence, having two levels: (a) With a Student and (b) Without a Student. Dependent variables were Patient Care, Non-Patient Care (e.g., support services, service to hospital and community, research, other clinical teaching and other) and Clinical Supervision.

Question three had three student experience predictor variables and three productivity criterion variables. The predictor variables were Practicum Hours, Practicum Week and Previous Experience. The criterion variables were Patient Care, Non-Patient Care and Clinical Supervision. Refer to Appendix A for complete definitions of the variables.

Data Analysis. Data analyses were carried out using StatView 4.0 (Haycock, Roth, Gagnon, Finzer & Soper, 1992). To determine the impact of student presence, Patient Care, Non-Patient Care and Clinical Supervision (measured in terms of average hours/week) were compared across the two conditions of Student Presence using a two-tailed, paired t-test to answer question one and two one-tailed, paired t-tests to answer questions two and three. Questions two and three were answered with one-tailed, paired t-tests because previous research in S-LP (Hancock, 1996) had indicated that Non-Patient Care (including Clinical Supervision) increased when students were present. Therefore, the researcher thought it acceptable to predict the direction of

change and to be less conservative by using one-tailed, paired t-tests for questions two and three.

The most common levels of significance used are .05 and .01 (Ventry & Schiavetti, 1986). Traditionally, when performing comparisons on the same subjects, a more stringent level of significance is calculated in order to compensate for an increased experiment-wise error rate (Kirk, 1968). However, Huberty (1987) stated that "few researchers believe that any alpha level is sacred" (p.5). In fact different alpha levels tend to be used depending on whether the study at hand was exploratory, conducted multiple comparisons on the same subjects, or had been heavily studied previously (Huberty, 1987; Ventry & Schiavetti, 1986). Huberty (1987) also stated that exploratory research or studies that conduct multiple statistical tests, use alpha levels ranging as high as .10 to .20. This argument appears valid, since investigators would not want to disregard results from an exploratory study simply because the results did not meet the more stringent levels of significance of .05 and .01. This study was exploratory in nature and conducted three comparisons on the same subjects. Three t-tests were used to analyze the data, each at the .10 level of significance. Therefore, this study's error rate was calculated as: Error rate = .10/3 (number of comparisons). This correction resulted in a critical alpha level of 0.033, which was used as the criterion for a significant difference in the three analyses.

Question four was answered with a Pearson product-moment correlation to determine the relationships between the student experience predictor variables (Practicum Hours, Practicum Week, Previous Experience) and the productivity

criterion variables (Patient Care, Non-Patient Care, Clinical Supervision). Since this study had 11 student/supervisor pairs, an r greater than or equal to .521 was required for significance at a probability level of .05 (Sincich, 1985).

Validity. All data recording tools that were returned unspoiled were taken as valid indices of how participants spent their time.

Reliability. A computer database was created. All variables used for descriptive and comparative analyses were checked for point-to-point agreement between the original data summary sheet and the computer file used for the data analyses. Overall point-to-point agreement was 100%.

CHAPTER 4

RESULTS

Descriptive Statistics

Descriptive data for Patient Care, Non-Patient Care and Clinical Supervision under the two conditions of Student Presence appear in Tables 1, 2, 3 and Figure 1.

Table 1

Descriptive Statistics for Patient Care

Patient Care (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	27.73	11.50	36.00	7.59
With a Student	40.21	19.25	70.25	14.27

Table 2

Descriptive Statistics for Non-Patient Care

Non-Patient Care (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	8.32	4.00	23.50	5.48
With a Student	11.27	3.25	27.75	7.48

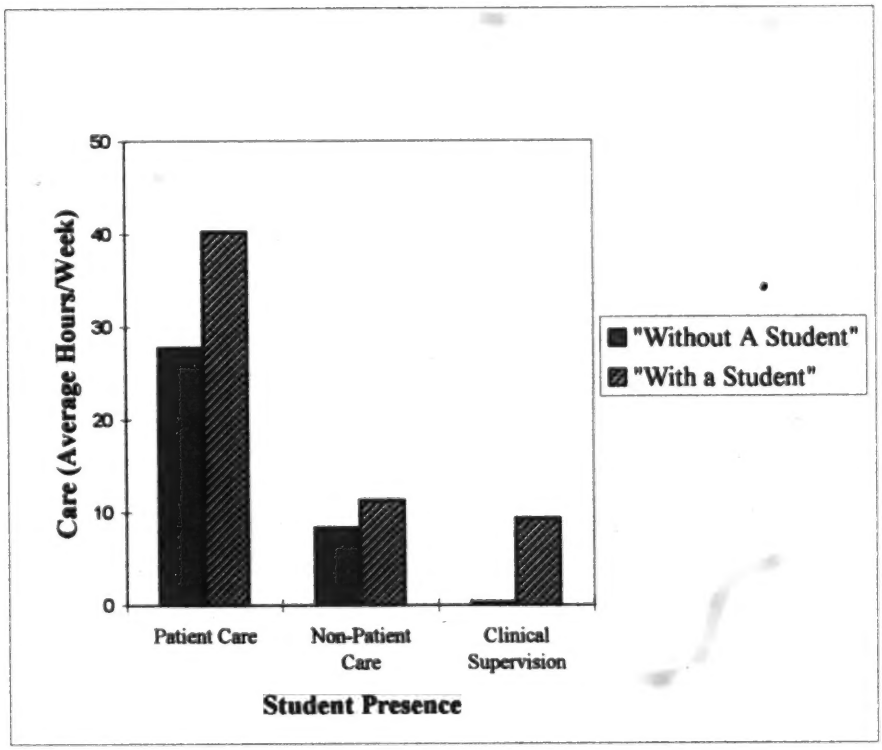
Table 3

Descriptive Statistics for Clinical Supervision

Clinical Supervision (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	0.32	0.00	1.25	0.55
With a Student	9.27	0.50	15.00	4.99

Figure 1. Mean Care by Student Presence.

	"Without A Student"	"With a Student"
Patient Care	27.73	40.21
Non-Patient Care	8.32	11.27
Clinical Supervision	0.32	9.27



Descriptive data for Practicum Hours, Practicum Week and Previous Experience appear in Table 4.

Table 4

Descriptive Statistics for Student Experience Predictor Variables

Variable (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Practicum Hours	374.02	200.00	596.00	132.82
Practicum Week	6.91	4.00	11.00	2.43
Previous Experience	7.05	0.00	26.00	7.69

Comparative Statistics

Three paired t-tests were used to answer research questions one, two and three. Research question number one, which asked whether student presence would alter the amount of patient care, was answered with a two-tailed, paired t-test. Question number two, which asked whether student presence would increase the amount of non-patient care not related to clinical supervision was answered with a one-tailed, paired t-test. Question number three, which asked whether student presence would increase the amount of clinical supervision was also answered with a one-tailed, paired t-test.

Results of the t-test comparing the mean amount of patient care without students present ($\underline{M}$ = 27.73) to the mean amount of patient care with students present ($\underline{M}$ = 40.21) revealed a significant difference, $t(10) = -4.118$, $p = .0021$.

Results of the t-test comparing the mean amount of non-patient care without students present (M = 8.32) to the mean amount of non-patient care with students present (M = 11.27) revealed a significant difference, t(10) = 2.297, p = .0223.

Results of the t-test comparing the mean amount of clinical supervision without students present (M = 0.32) to the mean amount of clinical supervision with students present (M = 9.27) revealed a significant difference, t(10) = -5.826, p = .0001.

A Pearson product-moment correlation was used to answer research question four, which asked whether there were relationships between student experience (Practicum Hours, Practicum Week, Previous Experience) and productivity (Patient Care, Clinical Supervision, Non-Patient Care).

A strong, significant and positive correlation was found between student experience, as measured by Previous Experience, and amount of Patient Care ($r=.856$, $p<.05$). A significant, negative correlation was found between student experience, as measured by Practicum Hours, and amount of Non-Patient Care ($r=-.631$, $p<.05$) (Table 5).

Table 5

Correlation Matrix for Student Experience Predictor Variables and Productivity Criterion Variables

	Patient Care	Clinical Supervision	Non-Patient Care	Practicum Hours	Practicum Week	Previous Experience
Patient Care	1					
Clinical Supervision	-.023	1				
Non-Patient Care	-.533	-.369	1			
Practicum Hours	.212	.086	-.631	1		
Practicum Week	-.124	-.293	.084	-.339	1	
Previous Experience	.856	-.342	-.452	.472	-.118	1

CHAPTER 5

DISCUSSION

The findings from this study will be covered in this discussion. First, the effects of student presence on three forms of productivity, Patient Care, Other Non-Patient Care and Clinical Supervision, will be discussed. Second, the relationships between student experience variables and productivity variables will be presented.

Research Question #1

Results for question one, which asked whether student presence would affect the amount of patient care, indicated students significantly increased the amount of patient care provided in the institutions with which they were associated during their clinical training. These findings are important to the S-LP profession for three reasons. One, they are the only detailed, existing data of this type in S-LP, and they confirm the pilot study (Hancock, 1996) findings indicating that students are not a liability. Hancock's (1996) findings were the only hard data available in the field of communication disorders. Unfortunately, they were only pilot data that had not been presented or published, and they were inherently limited in terms of conclusions that could be drawn due to the limitations of the WMS and the available data codes for non-patient care. Two, the current results corroborate the findings from other professions which indicate that students during their clinical training are not a liability in terms of the amount of patient service provided (Bristow & Hagler, 1994, in press;

Cebulski & Sojkowski, 1988; Ladyshewsky, 1995; Leiken, 1983; Leiken et al., 1983; Lopopolo, 1984; Porter & Kincaid, 1977).

A third reason these findings are important is that they encourage the participation of institutions in the education of S-LP students, because they indicate that students have a positive effect on institutional productivity, as measured by the amount of patient care. These objective findings were subjectively supported by supervisor and student subjects' written comments made in response to a question that appeared on the Care Units Documentation Form (Appendix D). This question solicited the subjects' impressions of how student presence influenced the service provided at their institutions. Nine respondents indicated that having a student present increased service time by allowing more patients to be assessed and treated. Two respondents reported that more individual treatment was provided than group treatment with students present. Reduced waiting lists were observed by two participants. Five subjects stated that students freed supervisors to accomplish more non-patient care (not supervisory in nature) while their students performed the direct treatment. Five respondents indicated that student presence introduced vitality to the institutions with the sharing of new ideas and resources. These subjective comments suggest that student presence does not only enhance the quantity of service time but may also increase the quality of service through increased individual treatment and professional development of new ideas and resources.

The results provide S-LP practicum coordinators hard evidence to help counter the preconceived negative impressions held by many professionals and some

institutional administrators who consider practicum students to be a liability to patient service. Certain individuals in local S-LP programs have expressed reservations about taking S-LP students because of their beliefs that students have a negative impact on service delivery (P. Hagler, personal communication, November 4, 1996; L. McFarlane, personal communication, November 4, 1996). To date, the S-LP profession has had no objective evidence that students are either an asset or a liability. Clinical coordinators now have evidence that S-LP students do not decrease institutional productivity and, in fact, improve service delivery in terms of increased amounts of patient care.

Research Questions #2 and #3

Questions two and three for this study attempted to address the limitations in Hancock's (1996) pilot study, which could not ascertain where the increased non-patient care was being utilized when students were present. Question two, which asked whether student presence would increase the amount of non-patient care not related to clinical supervision, indicated that students significantly increased the amount of non-patient care provided in the institutions they were associated with during their clinical training. Question three, which asked whether student presence would increase the amount of clinical supervision, indicated that students significantly increased the amount of clinical supervision provided in the institutions during their clinical training.

Hancock's (1996) pilot study previously found that non-patient care increased. Faced with the above findings, the sceptical professional might say that non-patient

care increased when students were present, because extra time was given to clinical supervision of those students, resulting in nothing more than an exchange of patient care time for supervision time. However, research on questions two and three for this study not only confirmed Hancock's (1996) findings that non-patient care increased with students present, but also was able to investigate whether students were an asset or a liability by breaking supervisor's time into Non-Patient Care and Clinical Supervision. While non-patient care obviously increased when students were present (due to clinical supervision), patient care and non-patient care not related to clinical supervision also increased significantly. By indicating that Non-Patient Care significantly increased when students were present, the investigator was able to show that the increase in non-patient care was not due solely to the increase in clinical supervision. Therefore, clinical supervision time did not come at the expense of Patient Care or Non-Patient Care. The students and/or the supervisors had time to perform additional hours in both areas of Patient Care and Non-Patient Care. Thus, these results confirmed students were an asset.

It is important to mention that subjects were asked to record data for five potential areas of non-patient care (Support Services, Service to Hospital & Community, Research, Other Clinical Teaching, Other). Unfortunately, three areas (Research, Other Clinical Teaching & Other) occurred so infrequently (3 or fewer times), they were judged to be uninteresting indicators of how supervisors spent their non-patient care time. Thus, only the areas of Support Services and Service to Hospital and Community had an adequate number of occurrences to indicate changes

in how supervisors spent their non-patient care time. In retrospect, the principle advantage of having included the five subcategories of non-patient care was probably their defining attributes for the term "non-patient care". A complete definition was critical for a reliable response, but as it turned out, non-patient care in general was more interesting. Data came from many different institutions, and the type of institution (e.g., educational hospital, health unit) seemed to determine how non-patient care time was spent. Furthermore, it seemed likely that non-patient care time varied considerably from one time period to another. Based on the above reasoning, the researcher decided to maintain Non-Patient Care as one variable. Descriptive data for Support Services, Service to Hospital and Community, Research, Other Clinical Teaching and Other under the two conditions of Student Presence appear in Tables 6, 7, 8, 9 and 10. No descriptive statistics are reported for conditions in which the service was reported by only one respondent, this is indicated in Table 9 by "—".

Table 6

Descriptive Statistics for Support Services

Support Services (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	5.84	0.75	23.50	6.07
With a Student	7.41	1.50	27.75	7.14

Table 7

Descriptive Statistics for Service to Hospital & Community

Service to Hospital & Community (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	0.91	0.00	5.00	1.57
With a Student	1.86	0.00	7.00	2.87

Table 8

Descriptive Statistics for Research

Research (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	0.59	0.00	3.25	1.10
With a Student	0.64	0.00	3.00	1.06

Table 9

Descriptive Statistics for Other Clinical Teaching

Other Clinical Teaching (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	–	–	–	–
With a Student	0.46	0.00	3.50	1.11

Table 10

Descriptive Statistics for Other

Other (Average Hours/Week)	Mean	Minimum	Maximum	Standard Deviation
Without a Student	0.89	0.00	7.75	2.35
With a Student	0.91	0.00	3.50	1.35

Summary. The above results come at a very crucial time in health care. Provincial government cutbacks for health care services have increased staff shortages and decreased service provision. The termination of most middle-level managers has increased stress for frontline workers who have been required to take on administrative responsibilities. New responsibilities may come with no reduction in other caseloads. These stressors have increased the importance that no further pressures be placed on S-LP departments. Clinical supervision of students has often been viewed as an added job burden. The reality of healthcare cutbacks combined with a belief that students decrease institutional productivity will almost certainly lead individuals to refuse to accept students. Refusals will lead to shortages of clinical placements. Institutional directors and supervisors need to be provided with data that show the amounts of patient care and non-patient care not related to clinical supervision increased when final placement students were being supervised. Ultimately, a two-tailed, paired t-test indicated that the increased amount of patient care and non-patient care not related to clinical supervision was significantly greater than the supervisors' time spent in clinical supervision, $t(10) = -9.861$, $p = .0001$. Similar findings in physical therapy (Bristow & Hagler, 1994) found that students' amount of direct care was significantly greater than the amount of supervisors' supervision time, thus confirming that students are an asset.

Research Question #4

Question four addressed the issue of how student experience may influence productivity by asking whether there were any relationships between student

experience (Practicum Hours, Practicum Week, Previous Experience) and productivity (Patient Care, Clinical Supervision, Non-Patient Care). One strong, significant and positive correlation was found, that was between Previous Experience and Patient Care. It follows that Previous Experience, which was the number of months of full-time equivalent (FTE), related clinical or teaching experience, was the only strong, significant variable that differentiated students from one another. Student subjects had little variance in S-LP program requirements (Practicum Hours) and final practicum experience (Practicum Week), because all were in their final placements. The only student experience variable that should have differentiated between students was the experience with which they entered the S-LP program and/or the experience they acquired during the S-LP program on their own initiative but unrelated to the program itself. This correlation speaks to the possibility that previous experience may lead to increased confidence which may, in turn, enable students to perform patient care more independently (without extensive direct supervision).

The strong correlation between Previous Experience and Patient Care suggests that productivity would be increased even more, if all S-LP students had previous related clinical or teaching experience before entering the program and/or acquired related clinical or teaching experience during the program prior to the practicum experience. These findings suggest that S-LP academic programs could consider giving preference in the selection/admissions process to student applicants who have related clinical or teaching experience. Related experience seems to give an advantage to students in their S-LP practicums. Academic programs that select with this

criterion in mind could promote their students to clinical service facilities as students having strong backgrounds in related clinical or teaching experience who, therefore, may contribute more effectively to an institution's productivity. This could lead to increased productivity and possibly lower the time commitment for clinical supervision.

A second significant correlation (inverse) was found between Practicum Hours and the amount of Non-Patient Care (Appendix A). The more practicum hours a student entered this final practicum with, the fewer Non-Patient Care hours were performed and vice versa. It is important to remember that while this correlation was significant, it was not a strong significant correlation (as found between Previous Experience & Patient Care). A possible explanation is that the students entering with more practicum hours were the ones who felt confident to independently (without direct supervision) perform more patient care, allowing their supervisor to simultaneously provide patient care to other patients. This explanation would support the increase found in patient care with students present (question one). Students entering the practicum with fewer speech related practicum hours possibly needed time to build the confidence to independently perform a greater amount of patient care (although they still performed some patient care) and therefore performed more job responsibilities in the Non-Patient Care areas (Appendix M). This explanation was corroborated by the comments of four respondents who stated that, in general, having students present affected patient care, because the students were slower in performing assessment procedures and in providing feedback to the patients and/or families.

No correlations between Practicum Week and productivity variables supports previous research findings (Cebulski & Sojkowski, 1988; Graham et al., 1991) that indicate full-time placements of two weeks or greater enhance productivity. For this study, the student subjects' week of practicum varied, however the minimum number of weeks any student had in this practicum was four weeks (Table 4). Thus, the student subjects were in full-time placements and were past the critical time requirement of two weeks allowing them all to function at comparable levels of productivity and efficiency. It would be interesting in future studies to compare the productivity of student subjects at various stages in the practicum (e.g. student subjects in week one/two and beyond week three of the practicum).

Summary. The present findings demonstrate that there are no relationships between clinical supervision (a productivity variable) and student experience variables. However, student experience does have relationships with Patient Care (Previous Experience) and Non-Patient Care (Practicum Hours). The statistics all indicate that students increased productivity.

CHAPTER 6

CONCLUSIONS

The purpose of this study was to investigate whether S-LP students were an asset or a liability to the institutions with which they were associated during their clinical training. It was anticipated that final placement S-LP students would increase institutional productivity based on previous retrospective productivity studies in S-LP (Hancock, 1996) and physical therapy (Bristow & Hagler, 1994, in press; Cebulski & Sojkowski, 1988; Ladyshewsky, 1995).

First, this chapter will condense and summarize the findings of this study. Second, limitations of this study will be discussed. Finally, suggestions for future research will be presented.

Patient Care and Non-Patient Care

Patient Care. Results of this study indicated that student presence significantly increased the amount of patient care provided in the institutions during their full-time clinical training. Hancock's (1996) pilot study was not able to demonstrate this same increase in the amount of patient care provided at the rehabilitation hospital where data were collected. The absence of a significant increase in patient care may have been due to the manner in which data were collected. The pilot study had four serious limitations: (a) it used data that were recorded by the supervisor and entered into the hospital computer database without conferring with the student to confirm that all the student's time was entered correctly, (b) it used retrospective data from one institution, (c) it had student subjects with one more year of coursework to complete before

graduating and (d) subjects were not trained in the data recording method by the same person.

In comparison, this study was designed to ensure that: (a) both the supervisor and student recorded, conferred and validated that data were entered correctly before mailing the data back to the researcher, (b) data were recorded from 11 different institutions, (c) all 11 student subjects had completed the coursework required to graduate and (d) subjects were instructed in the data recording method by the same researcher.

This work supports Hancock's (1996) pilot study which found that students are not a liability based on the amount of patient care. The current study was able to proceed one step further and demonstrate that patient care actually increased with students present.

A limitation of this study was that it did not consider what the qualitative issues were when students performed patient care. Now that it is known that the amount of patient care increases, the next step is to determine whether the quality of care provided by students is at least equal to the quality of care provided by their supervisors. Does quality decrease if a patient has to change clinicians (go from supervisor to student)? Would the patient have achieved goals more efficiently if the professional, not the student, had been providing the therapy? Do students provide even higher quality care since they are excited about their new profession and need to pass their practical training in order to become a professional? These are all issues

that still must be investigated now that some of the quantitative results have been determined.

Non-Patient Care. This study found that students significantly increased the amount of non-patient care, confirming Hancock's (1996) pilot study findings of increased non-patient care with students present. The fact that non-patient care would increase with students present would almost be expected, even without research to validate it, since the presence of students increases non-patient care in the form of clinical supervision. Students could very well have been considered a liability if the amount of patient care had decreased and the amount of clinical supervision had increased. However, this was not the case. The mean amount of patient care and non-patient care not related to clinical supervision increased significantly with students present, as did clinical supervision. The previously mentioned post hoc two-tailed, paired t-test findings indicated that the amounts of Patient Care and Non-Patient Care were significantly greater than the amount of supervision time required to achieve these significant increases. This indicates that the increased clinical supervision hours required with students present were not being taken from the Patient Care or Non-Patient Care job responsibilities. Therefore, no area of care was being sacrificed with students present. However, could this indicate that students are a liability to their supervisors who would have to work extended hours to provide clinical supervision? The average number of hours worked by supervisors without students present was 36.36 hours compared to 37.16 hours worked with students present. The descriptive

data indicated that supervisors were not working more hours in order to accommodate students.

These results for patient care and non-patient care in S-LP support the previous findings in the physical therapy profession (Bristow & Hagler, 1994, in press; Cebulski & Sojkowski, 1988; Ladyshewsky, 1995) indicating that students are an asset to institutional productivity. Results of this study lead to the conclusion that student presence increased both the amount of patient care and the amount of non-patient care during their final placement of clinical training.

Relationships Between Student Experience and Productivity

Two significant relationships were found for student experience and productivity. A strong, positive relationship was found between Previous Experience and Patient Care. It appeared that the more months of FTE, related clinical or teaching experience students had prior to this study, the greater the amount of patient care that was performed and that the fewer months of FTE, related clinical or teaching experience students had prior to this study, the more patient care decreased. Previous, related experience was advantageous and related to the amount of patient care that was provided by the student/supervisor pairs. The significant relationship between patient care and experience may have been related to the students having previous experience and having completed all coursework for S-LP and thus, were more competent to independently carry out patient care duties of assessment and/or treatment. This finding supports the need for additional research that would include a broader range of S-LP student experience (not just final placement students) to investigate whether

increased patient care could be found with beginning students who enter their practical with previous, related experience. This study also only considered full-time practicum placements. What happens to the amount of patient care during part-time practicums?

The second significant (inverse) relationship existed between Practicum Hours and the amount of Non-Patient Care. The students with more practicum hours performed fewer hours of Non-Patient Care and the students with fewer practicum hours performed more hours of Non-Patient Care. Possibly, these students with more hours were more confident and, therefore, were busy performing patient care. None of the student experience variables seemed to relate to the amounts of Clinical Supervision that were required for students in this final practicum.

Limitations of the Study

This study attempted to measure whether student presence would affect patient care. A discussion of internal validity will focus on whether the manipulation of the independent variable was responsible for the changes observed in the dependent variables (Patient Care, Non-Patient Care, Non-Clinical Supervision Non-Patient Care). External validity will be discussed in terms of this study's findings.

Threats to Internal Validity. Ventry & Schiavetti (1980, 1986) determined that internal validity may be influenced by the following factors: (a) history, (b) maturation, (c) test-practice, (d) instrumentation, (e) differential selection of subjects, (f) mortality and (g) the Hawthorne effect.

A history effect may transpire when an external event occurs between the first and second measure of the dependent variable(s); ultimately, confounding the effect of

the independent variable(s). A history effect was possible since Patient Care, Non-Patient Care and Clinical Supervision were measured twice; once without students and once with students. However, the opportunity for an influential external event to occur was slight since the time span between taking data with students to taking data without students was very short (maximum of two months). The investigator also instructed the subjects not to take data during atypical weeks and to ensure that the week when data were collected without a student was comparable to the week when data were recorded with a student. Furthermore, it is reasonable to believe that natural fluctuations in amounts of patient care and non-patient care between the two measures would have varied downwards just as likely as they varied up.

The second threat to internal validity is maturation. Maturation refers to an internal (versus external as in history) event occurring within the subject(s) between the first and second measure of the dependent variable(s). Maturation could not have occurred in the student subjects, since data were collected on the students only once during a period of five consecutive days. Changes within the supervisor subjects may have been possible since supervisors had to record their patient care hours twice, once with students for five consecutive days and once without students for five consecutive days. However, the time period between these two data collection times was very short and the opportunity for experienced-based changes to occur in the supervisors would have taken more time.

Test-practice was not a possible threat to the internal validity since the recording of the time spent in care activities was not a test that supervisors could have

improved upon. It was simply recording how their time was utilized. The way a supervisor recorded their data would not have increased or decreased their patient care or non-patient care during data weeks. Supervisors may have become faster at recording their data since they would become more familiar with the classification headings for patient care and non-patient care. Students recorded data once. Thus, for students, the test-practice threat was not a factor.

Instrumentation was not a threat to internal validity. The one data collection tool, the Care Units Documentation Form, was a manual recording form based on the Speech/Language Pathology and Audiology Workload Measurement System (WMS) (1988). The WMS is a statistical database system which produces workload indicators for each staff member and student. It has been used across Canada in hospitals since 1988 to produce workload indicators for each staff member. Crucial funding allocation and service delivery decisions were routinely based on this system and represented actual service with approximate but reasonable accuracy. The WMS is a standard statistical recording system in health care facilities across Canada. Therefore, many S-LPs are well versed in the statistical productivity recording procedure. The supervisors and students were required to confer regarding the recording of care hours which allowed time for both to review the data and to jointly provide a reliability check before returning the data to the investigator.

Differential selection of subjects is another factor which can compromise internal validity. This factor was not thought to affect the internal validity of this

study, because all subjects were volunteer participants and the assignment to student/supervisor pairs was random.

Subject mortality was evident in this study. Thirty-six student/supervisor pairs were asked to participate in this study. Originally, 13 student/supervisor pairs agreed to participate. Two of these 13 pairs had verbally agreed to participate but withdrew from the study prior to signing the consent forms. There was no mortality of subjects during the study.

The Hawthorne effect, refers to changes in subject behaviour due to the subjects knowing they are participating in an experiment. If the Hawthorne effect was at play, it was possibly caused by the requirement to have the subjects fill out the Care Units Documentation Form. However, the threat was minimal as the data form required statistical information on productivity similar to that which any health care institution would require its employees to record on a monthly basis. Secondly, the Hawthorne effect should have been comparable across the two levels of Student Presence. It is also important to note that these results corroborated those of Hancock (1996) that arguably was not affected by the Hawthorne effect. Hancock's (1996) study was retrospective, therefore, the subjects were not aware that data were being collected and were unable to have predisposed the outcome based on their own preconceived conceptions about the impact of student clinicians.

In summary, this study was open to relatively few threats to internal validity. History, maturation, test-practice, instrumentation and differential selection of subjects

did not appear to be threats to internal validity. Mortality and possibly the Hawthorne effect may have affected internal validity for this study.

Threats to External Validity. Ventry & Schiavetti (1980, 1986) determined that external validity may be influenced by several factors: (a) reactive effects of pretesting, (b) subject selection, (c) reactive arrangements, and (d) multiple treatment interference.

Pretesting was not done for this study. Therefore, the reactive or interaction effect of pretesting was not applicable.

The subject selection threat deals with the extent to which the subjects participating in the study are representative of the group to which generalizations are being made. Student/supervisor pairs were selected on the basis of independent, mutual agreement to participate. The student subjects were all in the second year of their program and had completed their clinical coursework. Supervisors had a wide range of experience, both as supervisors and S-LPs, and they had worked in different settings across North America. However, the subject population obviously was interested in research with a special interest in student impact/supervision studies and may in some ways differ from the non-cooperating subjects. It is impossible to know if these 11 pairs were in any way different from the non-cooperating subjects. These results can only be generalized to other students who come from S-LP programs similarly structured to the University of Alberta's program who are in final, full-time practicums. Ultimately, this study's external validity of subject selection was affected due to the narrow range of student subjects.

Also of concern was the small sample size in this study. However, since this study compared data in a repeated measures design, a smaller sample was considered acceptable (Ventry & Schiavetti, 1980). Also, a similar study (Bristow & Hagler, in press) (n = 36 therapists & 101 students) was completed in 1994 using physical therapy subjects. More recently, a S-LP pilot study (Hancock, 1996) (n = 11 therapists & 11 subjects), designed after the Bristow and Hagler (in press) study and closely resembling this project, was completed. Both of these studies yielded similar and significant findings, thus providing reassurance concerning the external validity of this investigation.

The reactive arrangements factor is another threat to external validity. This factor investigates the extent to which any effects on the dependent variable are limited to the specific setting of the study. This study was not affected by this form of external validity. There was no one specific setting. Health units, hospitals and schools across North America (10 Canadian and 1 American) were utilized in this study and the results indicated that productivity increased with student presence at all the various institutions.

Finally, external validity may be affected by multiple treatment interference. Since only one treatment (student presence) was administered, this threat did not apply.

In conclusion, external validity was threatened only by subject selection. An additional limitation of this study was that it measured only the impact of student

presence on the quantitative value of the amount of patient care. It did not attempt to investigate the effects of student presence on the quality of patient care.

Implications for Future Research

This study provided convincing evidence that students were an asset in the institutions that participated. It is necessary that these findings be reinforced with additional studies, especially in the S-LP profession, that consider the limitations of this study. Future studies must investigate service area/program, institutional referral base, complexity of caseload and distinguish between different service facilities such as schools, health units, and acute care hospitals to observe the effects of student presence on productivity. Related studies might focus on the productivity levels achieved with differing practicums (in terms of number of weeks, part-time and full-time) and differing levels of student education and experience. The potential intricacies of the latter are still not fully understood from the current study. For example, is the number of months of prior teaching or clinical experience the best index to represent student experience and/or would S-LP program year affect productivity levels? S-LP research should replicate research done in the physical therapy profession using a collaborative clinical education model (Ladyshewsky, 1995). It would be worthwhile to measure the individual and interactive effects of student presence, student experience, and/or supervisor experience on the quantity and quality of patient care. Future research must continue to question the quality of care provided when students are present. The development of satisfaction scales, discharge rates, waiting lists, progress/outcome/maintenance scales and diagnostic accuracy

scales as data collection tools are all possible considerations for quantitative research. Researchers and clinical institutions may wish to consider how to broaden students' non-patient care experiences by providing students with opportunities to take part in research, inservices and support services other than patient care, ultimately, providing a complete education which would emphasize that an S-LP's job involves many areas in addition to patient care. The cumulative knowledge would help guide clinical institutions and academic training programs as they negotiate and plan for the clinical education process. In order for the S-LP profession to flourish and produce competent entry level therapists, clinical placements must continue within clinical service facilities. Therefore, it is of utmost importance that studies researching the impact of speech-language pathology students on institutional productivity continue.

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APPENDIX A
VARIABLES

1.0 INDEPENDENT VARIABLE

1.1 Student Presence (two levels)

1.1.1 "With a Student": A typical treatment week during which a supervisor had a student for at least five consecutive full-time working days or equivalent (e.g. 10 half working days). The week must not have been week one or the last week of the student placement.

1.1.2 "Without a Student": A typical treatment week during which a supervisor had no student for five consecutive full-time working days or equivalent (e.g. 10 half working days).

2.0 DEPENDENT VARIABLES/CRITERION VARIABLES (Adapted From Speech/Language Pathology, 1988)

There were three dependent/criterion variables: Patient Care, Non-Patient Care and Clinical Supervision.

2.1 Patient Care: Average hours/week

2.1.1 Patient Care was defined as all services and/or activities provided to or on behalf of a registered patient (Refer to Appendix M for example activities).

2.1.2 Derivation of Patient Care

- Patient Care was recorded to the nearest 15 minute interval.
- Patient Care was recorded in a decimal format e.g. 15 minutes was recorded as .25 and 30 minutes was recorded as .50.
- Patient Care was collected at two different points in time: (a) when a supervisor did not have a student and (b) when a supervisor did have a student.

2.2 Non-Patient Care: Average hours/week

2.2.1 Non-Patient Care was defined as activities required for the operation and/or maintenance of the speech/language pathology department and for the benefit of the department staff (refer to Appendix M for Types of Non-Patient Care and example activities).

2.2.2 Derivation of Non-Patient Care

- Non-Patient Care was recorded to the nearest 15 minute interval.
- Non-Patient Care was recorded in a decimal format e.g. 15 minutes was recorded as .25 and 30 minutes was recorded as .50.
- Non-Patient Care was collected at two different points in time: (a) when a supervisor did not have a student and (b) when a supervisor did have a student.
- Non-Patient Care consisted of all the hours that were recorded under the following headings: Support Services, Service to Hospital and Community, Research, Other Clinical Teaching and Other.

2.3 Clinical Supervision: Average hours/week

2.3.1 Clinical Supervision was defined as the dissemination of knowledge pertaining to speech/language pathology by means of lecture, demonstrations, observations or direct participation when a student was present (Refer to Appendix M for example activities).

2.3.2 Derivation of Clinical Supervision

- Clinical Supervision was recorded to the nearest 15 minute interval.
- Clinical Supervision was recorded in a decimal format e.g. 15 minutes was recorded as .25 and 30 minutes was recorded as .50.
- Clinical Supervision was collected at two different points in time: (a) when a supervisor did not have a student and, (b) when a supervisor did have a student.

- Clinical Supervision consisted of all the hours that were recorded under the following headings: Orientation & Explanation of Procedures and Equipment, Student-Supervisor Conference, W-PACC Orientation, Student Monitoring and Other (Practicum Student Related).

3.0 PREDICTOR VARIABLES

There were three predictor variables that occurred when students were present: Practicum Hours, Practicum Week and Previous Experience.

3.1 Practicum Hours

3.1.1 Practicum Hours was defined as the number of practicum hours the student had performed prior to this study's placement.

3.1.2 Derivation of Practicum Hours

- Practicum Hours was recorded to the nearest hour.

3.2 Practicum Week

3.2.1 Practicum Week was defined as the week that data for this study were recorded in the total number of weeks for this final placement. This week could not be the first or final week of practicum.

3.3 Previous Experience

3.3.1 Previous Experience was defined as months of full-time equivalent (FTE), related clinical or teaching experience (not including this practical experience) the student had.

3.3.2 Derivation of Previous Experience

- Previous Experience was recorded to the nearest quarter of a month.
- Previous Experience was recorded in a decimal format e.g. one week was recorded as .25 and 2 weeks was recorded as .50.

APPENDIX B
CARE UNITS DOCUMENTATION FORM - "WITH A STUDENT"
WORKING COPY FOR SUPERVISOR

Please decide, with your supervisor/student, which five day week or equivalent (e.g. ten half days) in **May or June** you will be recording your care time. Please choose a week (not the first or last week of placement) that is representative of a typical treatment week at your institution. Record your time to the nearest fifteen minute interval under the correct headings of patient care and non-patient care during this time period. Please confer with your supervisor/student to achieve agreement on the way the days were spent. In recording time, please use a decimal format, rounding up or down to the closest 15 minute interval, i.e., 18 minutes of work should be rounded down to .25 on your sheet, 23 minutes should be rounded up to 0.5.

General Categories of Work Related Activities	Day 1		Day 2		Day 3		Day 4		Day 5		Total Time (Hours to nearest 15 minute interval)	
	Sup	Sup/Stu	Sup	Sup/Stu	Sup	Sup/Stu	Sup	Sup/Stu	Sup	Sup/Stu	Sup	Sup/Stu
Patient Care												
Non-Patient Care												
Clinical Supervision												
· Orientation & Explanation of Procedures & Equipment												
· Student - Supervisor Conference												
· W.PACC Orientation												
· Student Monitoring												
· Other (University of Alberta student related)												
Support Services												
Service to Hospital and Community												
Research												
Other Clinical Teaching												
Student Activity												
Other (not University of Alberta student related)												
Daily Totals												

Sup = supervisor
Sup/Stu = supervisor/student combined activities

APPENDIX C
CARE UNITS DOCUMENTATION FORM - "WITH A STUDENT"
WORKING COPY FOR STUDENT

Please decide, with your supervisor/student, which five day week or equivalent (e.g. ten half days) in **May or June** you will be recording your care time. Please choose a week (not the first or last week of placement) that is representative of a typical treatment week at your institution. Record your time to the nearest fifteen minute interval under the correct headings of patient care and non-patient care during this time period. Please confer with your supervisor/student to achieve agreement on the way the days were spent. In recording time, please use a decimal format, rounding up or down to the closest 15 minute interval, i.e., 18 minutes of work should be rounded down to .25 on your sheet, 23 minutes should be rounded up to 0.5.

General Categories of Work Related Activities	Day 1		Day 2		Day 3		Day 4		Day 5		Total Time (Hours to nearest 15 minute interval)	
	Stu	Sup/Stu	Stu	Sup/Stu	Stu	Sup/Stu	Stu	Sup/Stu	Stu	Sup/Stu	Stu	Sup/Stu
Patient Care												
Non-Patient Care												
Clinical Supervision												
- Orientation & Explanation of Procedures & Equipment												
- Student - Supervisor Conference												
- W.PACC Orientation												
- Student Monitoring												
- Other (University of Alberta student related)												
Support Services												
Service to Hospital and Community												
Research												
Other Clinical Teaching												
Student Activity												
Other (not University of Alberta student related)												
Daily Totals												

Stu - student

Sup/Stu - supervisor/student combined activities

APPENDIX D
CARE UNITS DOCUMENTATION FORM - "WITH A STUDENT"
FORMAL COPY SENT BACK TO RESEARCHER

Please decide, with your supervisor/student, which five day week or equivalent (e.g. ten half days) in **May or June** you will be recording your care time. Please choose a week (not the first or last week of placement) that is representative of a typical treatment week at your institution. Record your time to the nearest fifteen minute interval under the correct headings of patient care and non-patient care during this time period. Please confer with your supervisor/student to achieve agreement on the way the days were spent. In recording time, please use a decimal format, rounding up or down to the closest 15 minute interval, i.e., 18 minutes of work should be rounded down to .25 on your sheet, 23 minutes should be rounded up to 0.5.

General Categories of Work Related Activities	Day 1			Day 2			Day 3			Day 4			Day 5			Total Time (Hours to nearest 15 minute interval)		
	Sup	Stu	Sup /Stu	Sup	Stu	Sup /Stu	Sup	Stu	Sup /Stu	Sup	Stu	Sup /Stu	Sup	Stu	Sup /Stu	Sup	Stu	Sup /Stu
Patient Care																		
Non-Patient Care																		
Clinical Supervision																		
- Orientation & Explanation of Procedures & Equipment																		
- Student - Supervisor Conference																		
- W.F.ACC Orientation																		
- Student Monitoring																		
- Other (University of Alberta student related)																		
Support Services																		
Service to Hospital and Community																		
Research																		
Other Clinical Teaching																		
Student Activity																		
Other (not U of A student related)																		
Daily Totals																		

Sup = Supervisor Stu = Student Sup/Stu = Supervisor/Student Combined Activities

Supervisor Signature _____ Student Signature _____

over please

Subject Pair Identification Number: _____

Student/Supervisor Team: _____

Name of Institution: _____

City/Province: _____

Dates of Practicum: Start _____ Finish _____

IF STUDENT, PLEASE FILL OUT THE FOLLOWING:

Age: ___ Number of years of University training: _____

Number of practicum hours prior to this placement: _____
Number of weeks of practicum: _____

Months of full-time equivalent (FTE) related clinical or teaching experience (not including this practical experience): _____

Which week of practicum data were collected (must not be first or final week of practicum): _____

In what way does your presence influence the service provided at the institution where you are placed?

_____

_____

_____

_____

IF SUPERVISOR, PLEASE FILL OUT THE FOLLOWING:

Years of full-time equivalent (FTE) work experience as a speech-language pathologist: _____ .

Approximate number of students supervised prior to this practicum: _____

Previous course work in supervision? ☐ Yes ☐ No

If yes, what type?
- ☐ Inservice — How many? _____
- ☐ Conference — How many? _____
- ☐ University Credit Course — How many? _____

In what way does student presence influence the service provided at your institution?

_____

_____

_____

_____

APPENDIX E
CARE UNITS DOCUMENTATION FORM - "WITHOUT A STUDENT"
WORKING COPY FOR SUPERVISOR

Please choose a week that is representative of a typical treatment week at your institution. Record your time to the nearest fifteen minute interval under the correct headings of patient care and non-patient care during this time period.

General Categories of Work Related Activities	Day 1	Day 2	Day 3	Day 4	Day 5	Total Time (Hours to nearest 15 minute interval)
	Supervisor	Supervisor	Supervisor	Supervisor	Supervisor	Supervisor
Patient Care						
Non-Patient Care						
Clinical Supervision						
- Orientation and Explanation of Procedures and Equipment						
- Student - Supervisor Conference						
- W.PACC Orientation						
- Student Monitoring						
- Other (University of Alberta student related)						
Support Services						
Service to Hospital and Community						
Research						
Other Clinical Teaching						
Other (not University of Alberta student related)						
Daily Totals						

APPENDIX F
CARE UNITS DOCUMENTATION FORM - "WITHOUT A STUDENT"
FORMAL COPY SENT BACK TO RESEARCHER

Please choose a week that is representative of a typical treatment week at your institution. Record your time to the nearest fifteen minute interval under the correct headings of patient care and non-patient care during this time period.

General Categories of Work Related Activities	Day 1	Day 2	Day 3	Day 4	Day 5	Total Time (Hours to nearest 15 minute interval)
	Supervisor	Supervisor	Supervisor	Supervisor	Supervisor	Supervisor
Patient Care						
Non-Patient Care						
Clinical Supervision						
- Orientation and Explanation of Procedures and Equipment						
- Student - Supervisor Conference						
- W.P.A.C.C. Orientation						
- Student Monitoring						
- Other (Univers ity of Alberta student related)						
Support Services						
Service to Hospital and Community						
Research						
Other Clinical Teaching						
Other (not University of Alberta student related)						
Daily Totals						

APPENDIX G
LETTER OF INVITATION - SUPERVISOR

Department of Speech Pathology and Audiology
Faculty of Rehabilitation Medicine, 2-70 Corbett Hall
University of Alberta, Edmonton, Alberta T6G 2G4

April 20, 1996

Dear Supervisor,

I am a Master of Science student in speech-language pathology at the University of Alberta. I am conducting a research project investigating the benefits and limitations of speech-language pathology (S-LP) students to institutions with which they are associated during their clinical training. This study has been reviewed and approved by the University of Alberta's Department of Speech Pathology and Audiology Ethics Committee.

Your name was provided to me by Lu-Anne McFarlane, the Academic Coordinator of Clinical Education for the University of Alberta's Department of Speech Pathology and Audiology, as a person who may be able to participate in this study. Participants will be University of Alberta student clinicians and their clinical supervisors. Participation is voluntary. Student-supervisor pairs will be selected on the basis of their independent, mutual agreement to participate.

This study will be implemented during the month of May for a five day period during which you have a student and after May for a five day period during which you do not have a student. You will be asked to record your patient care and non-patient care time daily on the Care Units Documentation Form for both time periods, with a student and without a student. This form will take about ten minutes per day to fill out. It is hoped that this type of information is already required for statistical purposes in your workplace and that completion of the documentation forms will not greatly exceed the time that you routinely allot for statistics.

If you are willing to participate in this study, please read the Information Sheet for Participants which outlines your role in the study. Next, sign and return one copy of the Informed Consent Document in the envelope provided **within five days** of receiving the document. The other copy is for your records. If both you and your student agree to participate, please refer to the envelope marked Care Units Documentation Forms which includes brief instructions.

If you do not wish to participate, please mark the appropriate box on the Informed Consent Document and return it in the envelope provided.

If you have any questions, please do not hesitate to contact me at (403) 458-5114. Your participation will be greatly appreciated. Thank you for considering this request.

Sincerely,

Jennifer Hancock, B.Sc.
Graduate Student and Associate Member

Paul Hagler, Ph.D.
Professor and Director

APPENDIX H
LETTER OF INVITATION - STUDENT

Department of Speech Pathology and Audiology
Faculty of Rehabilitation Medicine, 2-70 Corbett Hall
University of Alberta, Edmonton, Alberta T6G 2G4

April 20, 1996

Dear Student,

I am a Master of Science student in speech-language pathology at the University of Alberta. I am conducting a research project investigating the benefits and limitations of speech-language pathology (S-LP) students to institutions with which they are associated during their clinical training. This study has been reviewed and approved by the University of Alberta's Department of Speech Pathology and Audiology Ethics Committee.

Your name was provided to me by Lu-Anne McFarlane, the Academic Coordinator of Clinical Education for the University of Alberta's Department of Speech Pathology and Audiology, as a person who may wish to participate in this study. Participants will be University of Alberta student clinicians and their clinical supervisors. Participation is voluntary. Student-supervisor pairs will be selected on the basis of their independent, mutual agreement to participate.

This study will be implemented during the month of May for a five day period during which you are with your supervisor. You will be asked to record your patient care and non-patient care units daily on the Care Units Documentation Form for this time period with your supervisor. This form will take about ten minutes per day to fill out. It is hoped that this type of information is already required for statistical purposes in your workplace and that completion of the documentation form will not greatly exceed the time that you routinely allot for statistics.

If you are willing to participate in this study, please read the Information Sheet for Participants which outlines your role in the study. Next, sign and return one copy of the Informed Consent Document in the envelope provided **within five days** of receiving the document. The other copy is for your records. If both you and your supervisor agree to participate, please refer to the envelope marked Care Units Documentation Forms which includes brief instructions.

If you do not wish to participate, please mark the appropriate box on the Informed Consent Document and return it in the envelope provided.

If you have any questions, please do not hesitate to contact me at (403) 458-5114. Your participation will be greatly appreciated. Thank you for considering this request.

Sincerely,

Jennifer Hancock, B.Sc.
Graduate Student and Associate Member

Paul Hagler, Ph.D.
Professor and Director

APPENDIX I
PARTICIPATION GUIDE

Steps to Follow:

1. Please give envelope marked Supervisor to your supervisor.

SUPERVISOR AND STUDENT

2. Read the Information Sheet for Participants

3. Sign and return one copy of the Informed Consent Document, one for the supervisor and one for the student, in the envelope provided **within five days** of receiving the document. There should be two Informed Consent Documents placed in the return envelope which is found in the Student envelope.

   Keep the other copy for your records.

   If you do not wish to participate, please mark the appropriate box on the Informed Consent Document and return in the provided pre-addressed, stamped envelope.

4. If you both (supervisor and student) agree to participate, please refer to the envelope marked Care Units Documentation Forms.

5. Use the attached Classification Handout of Patient Care and Non-Patient Care Activities to assist you in filling out the Care Units Documentation Form for a period of five days. Please record data on a typical treatment week for a five day period (or equivalent e.g. 10 half days). Do not collect data in the first or last week of the placement.

6. If you are a student, you will fill out the "Working Copy for Student" of the Care Units Documentation Form - "With a Student".

   If you are a supervisor, you will fill out the "Working Copy for Supervisor" of the Care Units Documentation Form - "With a Student" and the Care Units Documentation Form - "Without a Student".

7. Once the week is completed please confer with each other regarding how time was spent and consolidate your two "Working Copies" on to the one "Formal Copy" of the Care Units Documentation Form - "With a Student" (found in the Student envelope). Remember to fill in both side one and side two of this form.

8. Return your completed "Formal Copy" of the Care Units Documentation Form - "With a Student" in the pre-addressed and stamped envelope (found in the Student envelope) as soon as the week has been recorded and no later than **June 30, 1996**.

SUPERVISOR ONLY

9. Once your student has left the practicum site, please fill out the "Working Copy for Supervisor" of the Care Units Documentation Form - "Without a Student" for a week that is comparable to the week when data were taken with your student.

10. Please return your completed "Formal Copy" of the Care Units Documentation Form - "Without a Student" in the pre-addressed and stamped envelope as soon as the week has been recorded and no later than **July 30, 1996**. If your student does not leave your supervision until July, please return the "Formal Copy" of the Care Units Documentation Form - "Without a Student" by **August 20, 1996** or sooner.

If your Care Units Documentation Forms have not been returned and you have consented to being in this study, I will be contacting you by phone or mail to remind you to mail back your completed forms.

Thank you.

APPENDIX J
INFORMATION SHEET FOR PARTICIPANTS

Title of Project: Impact of Speech-Language Pathology Students on Patient Care

Principal Investigator: Jennifer Hancock, B.Sc.
University of Alberta, Edmonton, Alberta
(403) 458-5114

I would appreciate your participation in a research project investigating the benefits and limitations of speech-language pathology (S-LP) students to institutions with which they are associated during their clinical training. By taking part in this study, you will help the process of gaining information regarding the impact of S-LP students on patient care. This will be of interest to clinical service providers, academic training programs and professional associations.

This study requires the student and supervisor to fill in Care Units Documentation Forms for research purposes covering a period of five consecutive work days (or equivalent). The supervisor also will fill out the Care Units Documentation Form for a five day period, with a comparable workload, after the student has completed the practicum.

Your time commitment will be a maximum of ten minutes for each day you record your patient care and non-patient care units and a final ten minutes to ensure that all information is mailed back to the investigator. Supervisors will be responsible for completing two five day periods of data collection. The total time commitment for supervisors will be approximately two hours over ten days. The total time commitment for students will be approximately one hour over five days.

I am the only person who will have access to research materials that could identify you. All information will be confidential. Written and magnetic storage records containing information that could be used to identify participants will be kept in a locked office for a period of five years and subsequently destroyed. All names will be replaced by numbers so that supervisor/student pairs' information will be coded by number. Overall findings, not individual responses will be reported.

There are no risks involved in being a part of this research study. Your participation in this study is completely voluntary. If you agree to participate, you may decide to withdraw from the study at any time without negative consequences.

If you have any questions about the investigation, please do not hesitate to contact me at the above number. Thank you for considering this request. Your help in this study is greatly appreciated and will determine its success.

APPENDIX K
INFORMED CONSENT DOCUMENT - SUPERVISOR

Title of Project: Impact of Speech-Language Pathology Students on Patient Care

Principal Investigator: Jennifer Hancock, B.Sc.
University of Alberta, Edmonton, Alberta
(403) 458-5114

I understand this study and have read the Information Sheet for Participants outlining the research project to be conducted by Jennifer Hancock.

I fully understand the nature of my involvement in this research and am aware that I may contact Jennifer Hancock at any time to ask questions and discuss this study. My participation is completely voluntary, and I may withdraw from the study at any time without having to give a reason and without any consequences.

All information provided will be kept confidential and only Jennifer Hancock will have access to research information that might identify me as an individual. All names will be replaced by numbers so that supervisor/student pairs' information will be coded by number. Overall findings, not individual responses will be reported.

I have discussed this project with my student and both of us will participate as a student/supervisor pair. I agree to take part in this study. I have received a copy of the Letter of Invitation and this consent form.

_____	_____	_____
Supervisor's Printed Name	Supervisor's Signature	Date

☐ I will not be participating in this project.

* Two copies of this form are provided for your completion and signature. Please keep one copy and mail one back to Jennifer Hancock in the pre-addressed and stamped envelope.

APPENDIX L
INFORMED CONSENT DOCUMENT - STUDENT

Title of Project: Impact of Speech-Language Pathology Students on Patient Care

Principal Investigator: Jennifer Hancock, B.Sc.
University of Alberta, Edmonton, Alberta
(403) 458-5114

I understand this study and have read the Information Sheet for Participants outlining the research project to be conducted by Jennifer Hancock.

I fully understand the nature of my involvement in this research and am aware that I may contact Jennifer Hancock at any time to ask questions and discuss this study. My participation is completely voluntary, and I may withdraw from the study at any time without having to give a reason and without any consequences.

All information provided will be kept confidential and only Jennifer Hancock will have access to research information that might identify me as an individual. All names will be replaced by numbers so that supervisor/student pairs' information will be coded by number. Overall findings, not individual responses will be reported.

I have discussed this project with my supervisor and both of us will participate as a student/supervisor pair. I agree to take part in this study. I have received a copy of the Letter of Invitation and this consent form.

_____	_____	_____
Student's Printed Name	Student's Signature	Date

☐ I will not be participating in this project.

* Two copies of this form are provided for your completion and signature. Please keep one copy and mail one back to Jennifer Hancock in the pre-addressed and stamped envelope.

APPENDIX M
CLASSIFICATION HANDOUT OF PATIENT CARE AND NON-PATIENT CARE ACTIVITIES

Dear Participants,

The following definitions are provided to you as guidelines to aide you in determining under what heading to record your time. If you have questions, please call Jennifer Hancock at (403) 458-5114.

"With a Student": A typical treatment week during which a supervisor has a student for at least five consecutive full-time working days or equivalent (e.g. 10 half working days). The week is not to be the first or the last week of the student placement.

"Without a Student": A typical treatment week during which a supervisor has a student for zero days out of five consecutive full-time working days or equivalent.

Patient Care: Average hours/week

Patient Care is defined as all services and/or activities provided to or on behalf of a registered patient.

Patient Care is recorded to the nearest 15 minute interval. Patient Care is recorded in a decimal format e.g. 15 minutes is recorded as .25 and 30 minutes is recorded as .50.

Patient Care example activities:
- preparation or planning time
- file review
- assessment
- treatment
- meetings and/or conferences
- counselling
- documentation
- report writing
- selection and evaluation of devices/resources/materials
- education of patient/family/guardians

Non-Patient Care: Average hours/week

Non-Patient Care is defined as activities required for the operation and/or maintenance of the speech/language pathology department and for the benefit of the department staff.

Non-Patient Care is recorded to the nearest 15 minute interval. Non-Patient Care is recorded in a decimal format e.g. 15 minutes is recorded as .25 and 30 minutes is recorded as .50.

Types of Non-Patient Care

Clinical Supervision of University of Alberta Students or Students Who are Participating in Study) is defined as the dissemination of knowledge pertaining to speech/language pathology by means of lecture, demonstrations, observations, or direct participation.

clinical supervision example activities:

- orientation and explanation of procedures and equipment
- student - supervisor conference
- W-PACC orientation (completion, review, discussion)
- student monitoring (reading reports, observing, audio/video tape monitoring)
- other (University of Alberta Student or student participating in this study Related Activities that do not fit under the above specified example activities for clinical supervision)

Support Services is defined as the group of activities required for the operation/maintenance of the speech/language pathology and audiology department and for the benefit of the department staff.

support services example activities:

- departmental management
- employee meetings
- caseload management
- program planning, management and evaluation
- statistics
- providing consultation
- receiving consultation
- departmental maintenance
- travel - on-site & off-site

Service to Hospital and Community is defined as the services rendered during paid hours for the immediate benefit of the hospital or community. While it is assumed that patients and families may at some point benefit, the distinction between this category and patient care services is that the hospital or community is the most immediate recipient of the services.

service to hospital and community example activities:

- board/committee functions
- public education/public relations
- consultations
- service to the profession

Research is defined as the designed and approved clinical or scientific investigations directed toward advancing knowledge in the field of speech/language pathology and/or audiology using recognized methodologies and procedures.

research example activities:

- reviewing previous research
- writing proposals
- compiling and analyzing data
- report writing
- meetings
- budget management

Other Clinical Teaching is defined as the preparation for orientation and instruction of other students and other hospital personnel regarding speech/language pathology and/or audiology treatment principles and theories and interprofessional working relationships. This heading is to be used for all other teaching or supervision that does not pertain to the supervised student participating in this study.

Student Activity is defined as the time spent by the S-LP student participating in this study to successfully complete the practical work. An experienced speech-language pathologist would not necessarily have to take part in these activities.

student activity example activities:

- observation of supervisor
- text book reading
- treatment material review/familiarization

Other is defined as the time that does not belong in any other category and does not involve the supervision of student involved in this study.